The Driller
The Driller
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ANNIVERSARY
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"I couldn't ask for better performance"

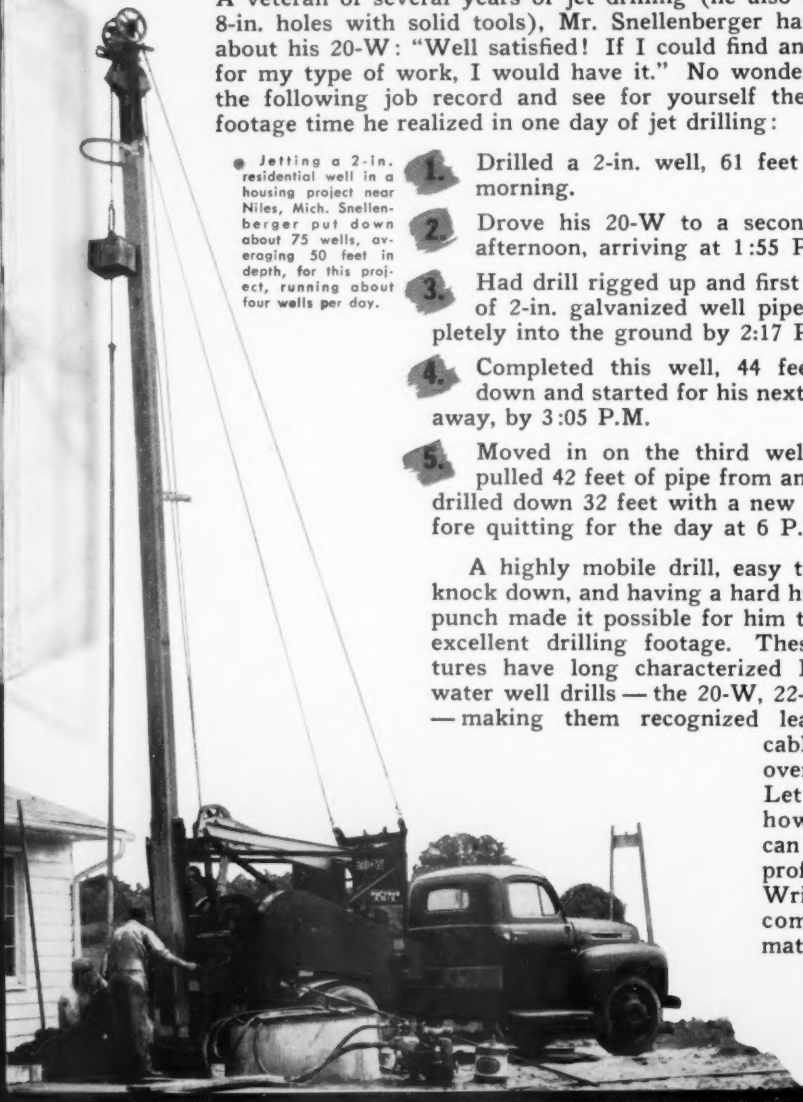
. . . says driller C. E. Snellenberger of South Bend, Indiana, about his Bucyrus-Erie 20-W water well drill.

For drilling 2-in. to 4-in. diameter water wells by the jetting method, Mr. Snellenberger uses a truck-mounted 20-W drill equipped with jetting tools and a 500-pound maul. A veteran of several years of jet drilling (he also drills 4-in. to 8-in. holes with solid tools), Mr. Snellenberger has this to say about his 20-W: "Well satisfied! If I could find anything better for my type of work, I would have it." No wonder! Look over the following job record and see for yourself the phenomenal footage time he realized in one day of jet drilling:

● Jetting a 2-in. residential well in a housing project near Niles, Mich. Snellenberger put down about 75 wells, averaging 50 feet in depth, for this project, running about four wells per day.

1. Drilled a 2-in. well, 61 feet deep, in the morning.
2. Drove his 20-W to a second job in the afternoon, arriving at 1:55 P.M.
3. Had drill rigged up and first 18-ft. section of 2-in. galvanized well pipe driven completely into the ground by 2:17 P.M.
4. Completed this well, 44 feet deep, tore down and started for his next job, 12 miles away, by 3:05 P.M.
5. Moved in on the third well, rigged up, pulled 42 feet of pipe from an old well and drilled down 32 feet with a new 2-in. well before quitting for the day at 6 P.M.

A highly mobile drill, easy to set up and knock down, and having a hard hitting drilling punch made it possible for him to realize this excellent drilling footage. These same features have long characterized Bucyrus-Erie water well drills — the 20-W, 22-W, and 24-L — making them recognized leaders among cable tool rigs all over the country. Let us show you how these rigs can mean added profits for you! Write today for complete information. 130W51C



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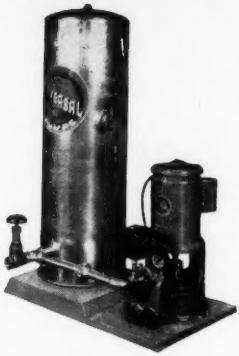

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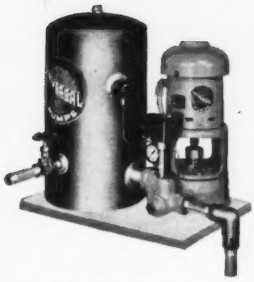

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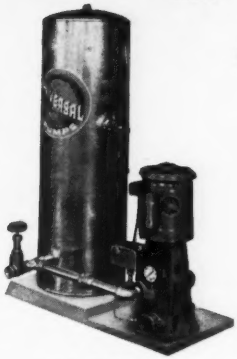

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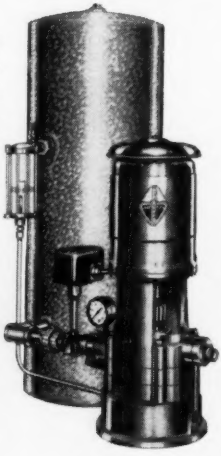

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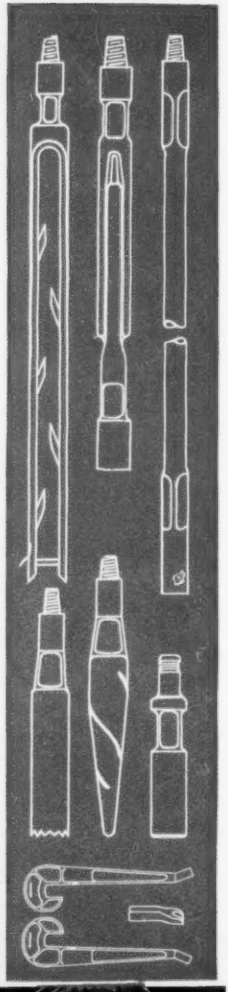

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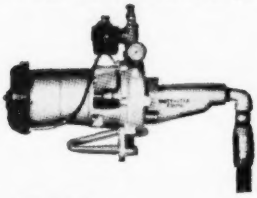

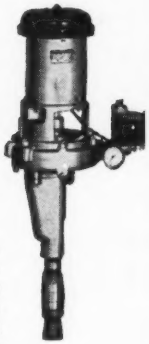

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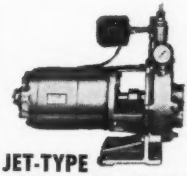

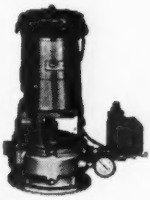

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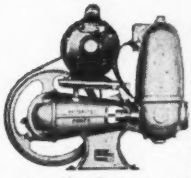

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The Driller

THE MONTHLY MAGAZINE
FOR WATER WELL DRILLERS
Founded 1927

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May, 1952

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The Virdells...

They Never Say "Can't"

By Ray Day

IN central Texas, where great domes and layers of solid granite jut to the earth's surface near Llano, two men with frowns on their faces were doing their best to figure a water well for a valuable piece of ranch property. The owner, an old rancher of German ancestry, was doggedly determined to have his well. The other man, a driller new to the locality, finally shook his head.

"It just can't be done," he said. "Even if this granite laid flat, you couldn't drill it. The way this stuff slopes, nothing could get down through the seams."

The old German exploded. "It can be done," he shouted. "I'm going to have my well. I'll call the Virdells. I should have done so long ago. They don't say 'can't'."

The Virdells were called and within five days the rancher had a well 120-feet deep with a yield of approximately 40-gpm.

What the old rancher said is a tribute to the Virdell Drilling Co., of Llano, Tex. Virdell is a traditional name in the Texas drilling business, both on water-well and oil work. Ever since 1902 when J. M. Virdell founded the company which bears his name today, there has never been a time when the Virdells were idle. Today they own and operate seven drills, use the heaviest drilling tools in their field, in Texas or any of the neighboring states, drill an average of 30 wells each month, and contribute much

In a part of the Texas country where drilling is tough this firm has, through perseverance, sound business principles and square dealing, become the leading drilling firm in the area. That oft repeated phrase—The difficult we do immediately—the impossible takes a little longer—would be a fitting slogan for this prospering company.

to the economy of the region they live in.

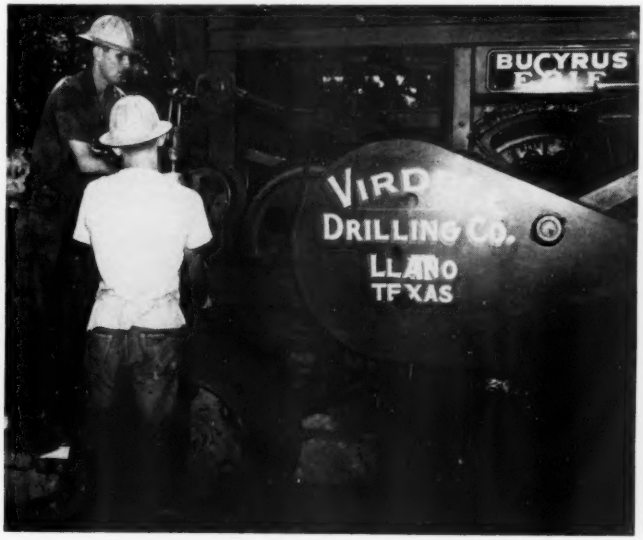
The Virdells are known today as the leading drillers in their area. Business comes to them because people recognize that nothing is too tough for them, and that a well drilled by them will be straight, true, and done in a minimum of time.

Eight County Area: All Bad

Their main operating area covers eight counties in central Texas, due north of San Antonio about 100 miles. These counties include Llano, whose county seat is the location of the company's present headquarters, San Saba, McCulloch, Burnet, Lampasas, Gillespie, Blanco and Menard. Quite often the Virdells also cover other counties around that area, too, when business crops up.

Llano County is the center of a geological formation called the Llano Uplift, a cover of solid granite often hundreds of feet thick. Great domes of this rock crop out, and in many places the topsoil is thin over the formation. Almost all the drilling in

• Above: J. C. and M. B. Virdell, right, both emphasize equipment care. They are shown with one of their two 36-L rigs during reconditioning and painting in the winter season.



• Taylor Virdell, left, sets a sharpened bit in a tempering pot of clear water. In granite, a bit is usually resharpened every two hours.

• One of the Virdell 24-L rigs is shown drilling an 8-in. well on the A. E. Grenwelge ranch near Llano. At the time of photo, depth was 105-feet. Final depth of well, drilled in granite-gravel and red granite, was expected to be around 115 feet.

several of the center counties must be done in this formation, most of which is seamed and sloped. In fact, the subterranean seams carry the underground water. To the west, limestones and shales are found. They drill much easier. But fully 75% of the drilling is in granite, and the Virdells have made a reputation through their ability to punch straight holes through sloping formations which knock tools lighter than theirs aside.

The firm's drilling area is composed largely of ranches, and a sizable percentage of the wells are for the development of a water supply for cattle. During the past 10 years, however, the reservoir area behind Buchanan Dam, near Llano, has rapidly developed into a resort area and the Virdells are drilling literally thousands of water wells for summer homes along the lake.

For water-well drilling, five Bucyrus-Erie 24-L rigs, powered by 53-hp Buda engines are used. These drills are all practically new. One is less than a year old.

In addition to water-well work, a great deal of oilfield drilling is done. The company owns two Bucyrus-Erie 36-L machines which it uses principally for this work. Most of the oilfield work involves such jobs as well deepening, cleaning, or swabbing. Once in a while one of the 36-L's is used on water well work, however, and on rare occasions the 24-L's have done oilfield work.

Good Business Policies

Operations of the Company are smooth and closely integrated around a business promotion plan and the actual mechanics of drilling the wells.

J. C. Virdell, who handles most of the promotion, purchasing and some of the tough problems is one of the co-owners. His brothers, M. B. and H. H. Virdell, are active members of the firm. His two sons, J. B. and Taylor Virdell, are also co-owners, as is H. S. Offer of Llano.

Principals in the organization, aside from the co-owners, include Bookkeeper O. E. Rice, a retired banker who consented to give his financial talents to the firm; Driller Bill Brown, 15 years with the company; and Luther Higgins and Kenneth Wells, drillers of about six years standing. Altogether the firm employs about 25 people.

Such an organization obviously has to do some business promotion to keep on its feet, and the Virdells have definite theories about that which have worked out well in practice. Let J. C. tell it.

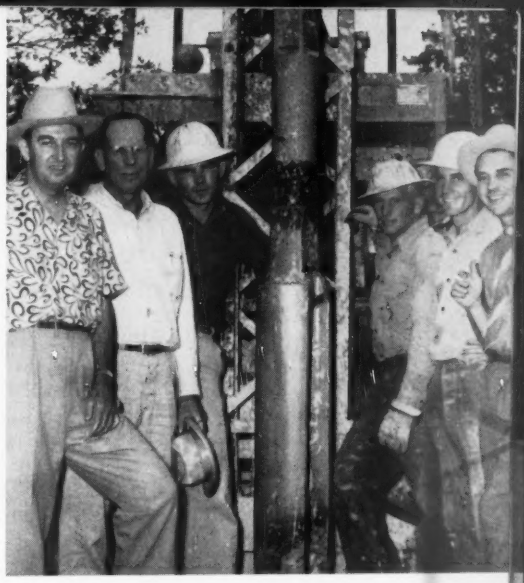
"We use a small amount of advertising space every month in many of the local papers around these eight counties," he explained. "The main purpose of this is to keep our name before the people."

"The secret of building up a drilling business is to solve a property owner's water problem by doing his drilling promptly, and right. That means getting out to his place as soon as possible, moving in and out without damaging his land or shooting his deer out of season, drilling the well with the least possible delay, and holding dry holes to a minimum.

"No matter how well established or how big a drilling company he develops, an owner must never lose sight of these fundamentals," Virdell explained.

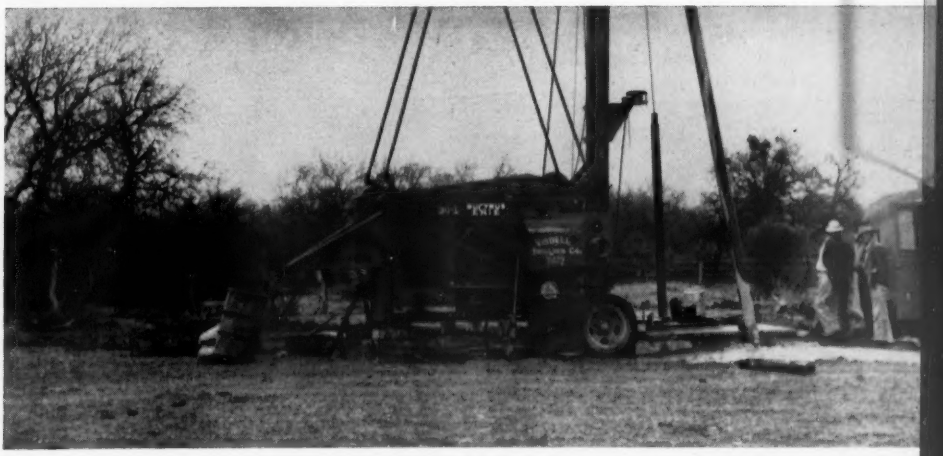
Virdell's theory works well in practice. At least 95% of the business he does comes to him over the telephone. People throughout his territory have come to depend on his rigs, and on his knowledge of the formations. Each rig averages from $2,900 to $3,200 worth of business per month.

Wells from 6 to 20 inches in diam-



• Some of the Virdells and their customers gather for a picture on one of the jobs. That's J. C. Virdell, second from left.

• This 24-L is the newest of the company's rigs, and is putting down a 500-ft. well through granite on a ranch. Water from the well will be used for stock during the dry summer months.



eter are drilled, and the deepest water wells go down from 1,500 to 1,800 feet. Oil well drilling to 3,300 feet is common.

Some of the Tough Ones

So far as drilling problems are concerned, the Virdells have had equal trouble moving in, drilling through sloping granite, and fishing for broken tools. The toughest job Virdell can recall was a water well that went to approximately 1,000 ft. in 1934, 12 miles southwest of Llano for rancher Mark Moss. In those days Virdell still hadn't learned to use heavy drill tools, and the light 6¼-in. tool string on his little spudder racked and bounced when it hit the tough granite. The outfit sat in one place and sweated it out for three months. When sloping granite seams were found, the drillers had to hold part of their load on the brake to keep the tools from running.

When the jobs were finished, Mark Moss had several good wells in a place many people had said was impossible to drill. The profit was negligible, but it has paid plenty of dividends in reputation since.

Drilling isn't as tough today. All the 24-L's are trailer mounted, and as a rule they can do anywhere a truck can go. The Virdells have long since shifted to the heaviest drilling tools anywhere in their region. Spe-

(Continued on page 34)

• Right: reading left to right are: Oliver Welgehausen and Henry Willbern, both drillers for the Virdells, Taylor, J. B., J. C. and M. B. Virdell. Below: neighbors and friends gather to help a customer celebrate another Virdell-drilled well. Note drillers in safety hats and part of 24-L rig in background.

Wells and Pumps For Irrigation

By Kenneth D. McCall
Asst. Area Planning Engineer
Bureau of Reclamation

At the 1951 annual meeting of the Oklahoma Water Well Drillers' Association, the author said that available government services seldom meet the requirements for technical help for individual farm-size irrigation and that consequently such development is a matter of individual initiative and financing. This article, taken from his talk, gives his views on how irrigation wells should be drilled, and on how pumps should be selected and installed to give the best services to farmers.

FOUR years ago in the Fort Gibson Bottoms east of Muskogee, Oklahoma, the irrigation possibilities based on two sources of water were investigated by the Bureau of Reclamation. One involved a canal system and a large pumping plant on the left bank of the Grand River; the other was by pumping from wells on individual farms. The Groundwater Branch of the Geological Survey cooperated in the groundwater investigations and interpreted the field data. The exploratory drilling and test pumping were done by an Oklahoma contractor.

The conclusion of the study was that irrigation would be profitable in the area and that the water users could afford to repay the cost of the project works involving the canal system and central pumping plant at the Grand River; but that there was sufficient groundwater and porous aquifer for individual well irrigation plants and that irrigation from

• Using a Bucyrus-Erie 20-W, Wayne Boone is shown drilling an irrigation test well near Tornillo, Tex. The 2½-in. hole was through sand, gravel and clay to 100-feet. Expected finish depth was 165 feet.

the wells would be cheapest for the farmers. Consequently, it was recommended that irrigation development should be a matter of individual initiative and financing.

In the late thirties the Kansas Division of Water Resources gathered data for bulletins on the construction and operating cost of pumping for irrigation. Most of the field work over a two year period involved pumping tests of more than 50 plants. Each of the tests was continued for several hours and during that time an inventory of the cost of all of the plant equipment besides a good many observations of rate of discharge, drawdown in the well, rpm of the pump or driving unit, rate of power input, etc., were noted.

One of the tests northwest of Garden City, Kan., involved a pumping plant where the water was discharged into an earthen reservoir before being released into the farm ditch. This is a common practice in which the object is to irrigate with a larger head of water than the pumping plant can deliver. The farmer can do that by pumping continuously but irrigating only in the daytime or a part of the day.

In this particular instance the rate of pumping was measured in the pipe to the reservoir and also as the gain overnight in the reservoir. When the gain overnight measured about 260 gpm whereas the pump discharged was 450 gpm, it was discovered that the reservoir had been built over an abandoned well. The farmer was simply circulating his well water. It is difficult to estimate the flow from a pipe even with experience, and to compare the reservoir inflow and outflow without measuring devices, almost impossible. Had proper measurements been made during construction of the plant this waste would have been stopped immediately. Farmers seldom are as well equipped as municipalities or industries to check or test the pumping equipment which they buy, and they cannot afford unnecessary waste in cost, design or efficiency of such equipment.

Well drillers and merchants of pumping equipment can render a real service to agriculture in helping

to develop irrigation and the author, in this article, gives some do's and don'ts about drilling irrigation wells that are intended to help drillers and pump merchants to serve the farmer better.

Drilling Problems Vary

Unlike domestic wells, irrigation wells should penetrate all porous aquifer within a reasonable depth, 300-400 feet could be considered as reasonable depth in the Oklahoma Panhandle country. There is little to gain with a well more than 18 inches in diameter. Probably 16 inches is a good minimum diameter too for wells in unconsolidated material. Where the sands are relatively fine as in the Panhandle, a gravel-pack is desirable to permit larger size perforations. The hole probably should be 30 inches or larger with the graded gravel envelope consisting of hard round aggregate from about 3/8 to 3/4 inch size. Uniform size might be the theoretical optimum but the cost of sorting would be prohibitive.

Very coarse gravel and cobble stones if included with finer material reduce the passage ways for water flowing to the well casing. An effective gravel wall permits the finer particles which can be moved by the velocity of water toward the well to flow through and into the casing. Ordinarily the sand drawn into the well will not be sufficient to develop a subterranean cavity in which sand might shift suddenly and collapse the well casing. Instances have occurred, however, and where there is any likelihood, the gravel pack should be replenished.

The desirability of exploring the immediate area pretty thoroughly

• Driller, Ralph Bower, left, drilled the irrigation well for William Thore, Bladen, Neb., farmer. They are shown at the water filled irrigation ditch. A Deming deep well pump is used.

• A Gladiolus farm in Florida gets a 4-in. irrigation well with the help of R. C. Pemelman and his 20-W.

cannot be over-emphasized. Formations vary greatly even within 100 feet and the difference in ultimate cost of pumping from two nearby well sites may be many times the cost of a little test drilling. Even on the High Plains, there has been so much difference in logs of nearby test holes that some drillers refer to "underground streams" which are visualized as being maybe less than 50 feet wide and continuing for several miles. In the stream you get a good well; away from it they are no good. Exploratory drilling certainly is warranted in most instances even when other factors limit the locations to a ten acre tract.

In the river valleys the water bearing sands and gravels probably are more variable than on the High Plains. Thorough test drilling is doubly justified both because it can be done quickly at the shallow depths and also because the well capacity may be wholly inadequate unless the best site is developed.

The matter of well casing corrosion and encrustation is relatively unimportant in irrigation wells. Except in unusual instances, the wells will continue to give good service for 20 years or longer.

The hydraulic rotary hole is the most popular for irrigation wells. In the Arkansas Valley east of Muskogee there are cobblestones mixed with the sand-gravels which would make hydraulic rotary drilling difficult. Probably a dummy casing should be used there with the finer material taken out with an auger or sand bucket and the very coarse with an orange-peel bucket. In that area the wells should not be stopped short of the valley floor which is only 40 to 60 feet below the land surface. It is good practice to complete a hydraulic rotary well in one continuous operation of a week or less so that all of the drilling mud can be removed from the wall of the hole. New techniques, better drilling machinery, improved lighting, etc., make continuous rapid drilling easier now than it once was.

• The 28-L drill shown here is down 505-feet for an irrigation well near Scottsdale, Ariz.

Pumps are Important

Pumps have also undergone much improvement and now there are a good many makes of pumps almost identical in design with little individual differences relatively unimportant to the irrigator. Two general types are used almost exclusively for irrigation. One is the horizontal centrifugal pump and the other is the deep-well turbine pump. The horizontal centrifugal pump is so named because the pump shaft is horizontal. Water is drawn into the pump at the center or at the shaft and thrown by the whirling impeller to the outside of the case where it flows

into the discharge pipe. The open impeller may be best for pumping where there is some trash such as a streambank plant.

The horizontal centrifugal pump makes for the cheapest installation where the depth to water is less than 20 feet and the drawdown will be less than 15 feet while pumping. One other practical limitation is that the general fluctuations of the water table be nominal — say not more than four feet — as the pump itself should be above the water at all times. Construction of the plant includes a pit down to the water table. The pump and preferably the power plant are in the pit. The suction pipe should have a foot-valve which should be close to the bottom of the well.

Advises Low Pressure Pumps

One popular design in some of the older irrigated areas is to have the pump discharged into a shallow concrete tank at the ground surface where the water flows over a lip or weir into the farm ditch. The tankful of water is available for priming when necessary. Common sizes are 4, 5, 6, and 8 inches, based on the diameter of the discharge pipe connection. Frequently, the suction size is an inch or two larger. A 4-in. pump will deliver about 500 gpm and an 8-in. pump up to 1,400 gpm.

Pressure developed by the pump is a function of the tip speed of the impeller. Consequently low pressure pumps have small diameter or rotate at low speed. Except for sprinkler systems irrigation pumps should be designed for low pressure since more pressure than required to lift the water to the ground surface is a waste.

The deep well turbine pump must fit inside the casing rather than rest on top of it. Consequently, the pump is designed for a limited space. Usually it is not more than 12 inches overall in diameter. The shaft goes down the well inside the discharge pipe which supports all of the pump. The bowls or stages are one to two feet apart along the shaft with an impeller fastened to the shaft and whirling in each bowl. The "turbine" feature of the pump is the vanes in the case which guide the water from the tip of one impeller back to the center or entrance edge of the next, meanwhile straightening out the flow to the axial direction. Generally speaking one stage is sufficient for 35 to 40 feet of head. Consequently, the wells on the High Plains usually are equipped with three to five stage pumps. The bowls should be deep enough in the well that they will be below water surface while pumping.

• This 22-W drilled a 10-in. irrigation well to 306-feet for a truck farm. Yield was up to 160 gpm.

Use Proper Gages

One of the most desirable attachments to a deep well irrigation pump is an air line and gage. With it the farmer can check his water level during the season while the pump is running. Without it he cannot measure the depth to water except when the pump is stopped and then is

(Continued on page 32)

NEWS of the month

Keep Water Supply Cool With Deeper Return Wells

Four deep wells, two supply and two return, provide water for several cooling processes at Timken Roller Bearing Company's two Columbus plants. Each supply well is approximately 400-ft. deep. Two multistage, centrifugal deep well pumps force water through a 3,000-ft. network of

F. K. Perry, Foreman Driller, G. M. Baker & Son, Inc., Columbus, Ohio, contractor, hoists section of 6-in. rigid plastic pipe installed in deep water well at Timken Roller Bearing Co., Columbus, Ohio.

factory pipe lines. Pumping capacity of the two systems is 650 gpm. This water is discharged into open cisterns before entering the return wells. The return wells, originally 400-ft. deep, are located within 120 feet of supply wells. Warm water entering the return wells was finding its way into the supply and raising the temperature appreciably, according to G. G. Prior, Chief Engineer.

To overcome the problem, the return wells were drilled to a depth of approximately 500 feet, tubed with Yardley 6-in. rigid plastic pipe to 475 feet and "packed off" at the 400-ft. level by G. M. Baker and Son., Inc., Columbus, Ohio, contractor. The warm return water now enters strata below the source of supply.

The deep well pumps are suspended in the supply wells at the foot of 6-in. pipe columns. Water in each column is under pump pressure, so that any leakage is from the inside to the outside of the pipe. These columns were formerly wrought iron, which corroded from hydrogen sulphide gas present in the water. Red brass columns have been installed as replacements.

Advocates Control of Artesian Wells in Colorado

A bill which would require any person drilling an artesian well more than three inches in diameter to get a permit from the state water conservation board was authored by Senator E. P. Hazard, Saguache, Colo. The bill is intended to give the state tight control over the drilling and use of artesian wells.

The Senator estimated there are some 10,000 artesian wells in the south-central Colorado valley — including "between fifty and sixty" big ones.

Some of them, he said, are allowed to flow day and night throughout

the year, a factor, Hazard said seriously affects the underground water table.

The bill provides, also, that drilling contractors put up a bond certifying the well has been properly drilled, and is drawing water from the proper level, and can be "capped."

He termed his bill the "beginning step" toward enacting a state underground water code designed to regulate wells, similar to regulations now governing surface water.

Hazard said the protection of this source of water and the necessity for controlling the disturbance of underground water tables is vital to south-central Colorado economy.

— Reprinted from The Denver Post

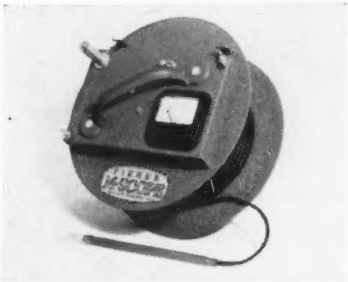
Arizona Commission to Study Water Resources

In signing into Arizona law a bill providing for the creation of a 24-member commission to study the state's underground water resources, Governor Pyle asserted on March 18 that his action must not be considered a "surrender" of the state's determination for eventual underground water controls.

The study commission bill, which included an appropriation of $100,000 was introduced by Senators Hubert O. Merryweather of Santa Cruz and James Herron, Jr., of Pinal, both Democrats, as a substitute for another proposal that would have set up a groundwater code for immediate control of pumping. The latter proposal, which died in the State Senate, had been offered by a groundwater committee named by the governor.

Under the enacted substitute measure, the governor will appoint the new commission, which is to be composed entirely of agriculturists. The commission will report its find-

WATER LEVEL INDICATOR



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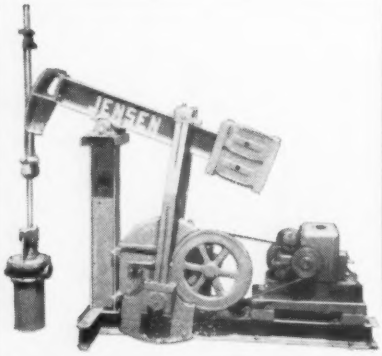

Pump Handle Pete Says:

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If a feller is depending on a creaky old windmill or other makeshift pumping equipment over his well — he's just kidding himself about economy.

For 30 years Jensen Pumping Units have been made in a big factory, and this mass production makes the price cheap. They've got quality, too, that only experience, know-how, and trained craftsmen can build into a piece of machinery . . . so a Jensen lasts longer and gives less trouble.

Your customers will appreciate this two-way economy of Jensen Pumping Units. You widen your circle of friends and help your reputation when you recommend a Jensen Unit. Write to 1016 Fourteenth St., Coffeyville, Kan., for catalog and prices.

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ings and recommendations by next Jan. 1.

"To this end," the governor said, "I shall endeavor to select members of the commission who will keep in mind the best interests of the entire state as well as that of agriculture in the performance of their duties and who will as economically as possible do their utmost to give definite recommendations to the Legislature within the time allotted by the act."

The study commission bill had been backed by the Farmers Defense Committee, a group comprised largely of Pinal County cotton growers. They had opposed immediate enactment of groundwater controls because there was insufficient information available on the condition of the state's water resources.

Associations Meet, Hold Annual Conventions

Kansas

Approximately 45 water well drillers and others interested in groundwater supplies attended the regional meeting of the Kansas Water Well Drillers' Assoc. in Lawrence, March 15, according to a release from the State Geological Survey.

In a morning meeting, held in the Mineral Resources Building at the university, topics discussed pertained to the interests of the Geological Survey, the State Board of Health, and the county agents and soil scientists in the Association. Speakers included Dr. John C. Frye, executive director of the State Geological Survey; Ivan F. Shull, Division of Sanitation, State Board of Health; Henry W. Schmitz, soil conservationist, U.S.D.A., Ottawa; and E. J. Jungmann, driller, Topeka.

After a noon luncheon an afternoon business session, was held with Wesley Weishaar, president of the organization and driller from Scott

Wm. M. Caudell, Sr.

Wm. M. Caudel, Sr., 56, Vice-President of the Whitewater Pump Co., Whitewater, Wis., and Executive Vice-President and General Manager of the Portable Elevator Mfg. Co., Bloomington, Ill., died suddenly of a heart attack in Bloomington on March 15th.

Born on October 10, 1895, in Indianapolis, Ind., he attended Purdue University. He was later associated with the Austin Western Road Machinery Corp. and also did management engineering work.

For several years, Mr. Caudell was comptroller of the American Hardware Corp. before joining Portable Elevator Mfg. Co.

City, presiding. Hazen Bledsoe, Strong City driller, talked on the benefits small drillers may derive from the Association and Jungmann outlined the NPA regulations on steel and copper. There was a round table discussion of "the kind of an association I would like to have," with association service secretary A. R. Leonard, Geological Survey, acting as moderator.

Michigan

The 24th Annual Convention of the Michigan Well Drillers' Assoc. will be held in Grand Rapids, June 26 and 27. Headquarters will be at the Rowe Hotel. Exhibits and displays will be shown at the Grand Rapids Stadium on Turner Street. Harold Armstrong, Secretary-Treasurer of the Michigan association was again appointed chairman of the convention.

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Los Angeles 21, 2055 Sacramento St. 1013

Missouri

The Missouri Water Well Drillers' Assoc. held its sixteenth annual convention, March 10 and 11 in Rolla, Mo. The Missouri Geological Survey and Water Resources building was used for the sessions and displays. A total of 118 members, guests and honorary members were present.

Officers for 1952 are Paul Clark, President, Fenton; Roy Wallace, Vice-president, Rolla; C. S. Wise, Secretary, Kirkwood; Frank Weldon, Treasurer, Cape Girardeau. The directors are B. G. Heinlein, Hermann; Walter B. Russell, Bolivar; D. T. Carroll, Swedeborg; and Dale L. Fuller, Service Secretary, Rolla.

Besides the business meetings, technical sessions were held Monday afternoon and Tuesday morning. Papers presented were "Sanitary Construction Features of Drilled Wells" by Walter Casey, District Engineer, state Division of Health, and "The Steel Outlook for 1952" by Robert R. Storm, Exec. Sec., NWWA. Tuesday morning was devoted largely to a demonstration of hardsurfacing of well bits by D. S. Lewis and George J. Stevens, Lincoln Electric Co.

At the annual banquet, gold lapel buttons were presented to the past-presidents of the Association as a token of appreciation for their services.

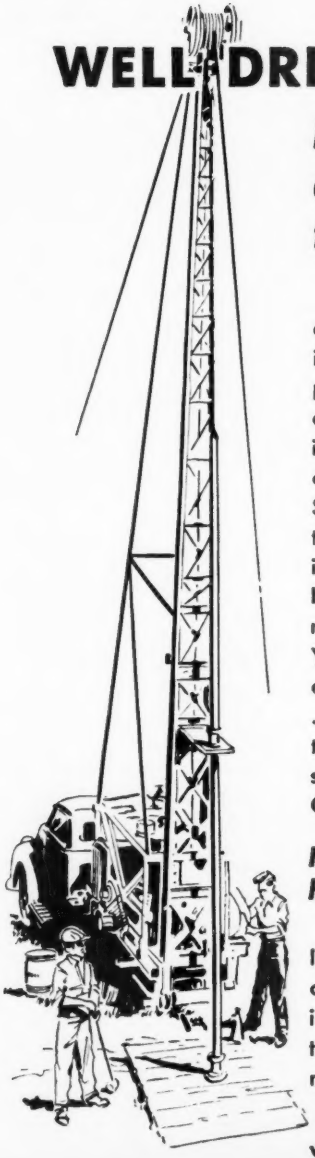
Plans are to hold the convention in Rolla again next year on April 13 and 14.

South Dakota

The 1952 Annual Convention of the South Dakota Well Drillers' Assoc. was held at Huron, S. D., Feb. 29 and March 1 and attended by 89 registered persons.

Carl Williamson, Redfield, was introduced as a guest and as the oldest driller present. He started drilling when well rigs were powered by horses, and he rode a bicycle to and

WELL DRILLERS FIND...



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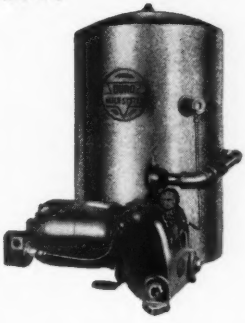

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from work. A luncheon was served at the hotel coffee shop for the wives of drillers present.

Dr. E. P. Rothrock, State Geologist, spoke on the necessity for having a workable water law in the state, and explained the proposed law which will be presented to the next legislature. Opinions were divided on the subject. C. C. Crumley, State Board of Health, talked on the necessity of sanitation in water well construction.

In the evening of the first day a banquet was held. John S. Hoge, President and Norman Ovrom, Executive Secretary of the Minnesota Water Well Contractors' Assoc. were special guests.

On Saturday, March 1, Robert Storm, Exec. Secy. of NWWA, gave a report on what has been learned about the new federal regulations on price ceilings and pipe allotments. Norman Ovrom addressed the assembled convention, including those wives present who do the bookkeeping, on the necessity of keeping books properly and doing some type of cost accounting.

In the afternoon, Bruno Petsch, of the state Geological Survey, gave a specially requested talk on South Dakota geology in respect to water supply, and, because of the oil boom in this area, explained the geology in the state with respect to possible oil discovery.

At the business meeting, the following officers were elected for the coming year: President, Martin Sather, Presho; Vice-President, Ben J. Schrag, Freeman; Secretary, Harold P. Norbeck, Redfield; and Treasurer, Ray Connor, Artesian. Board members elected were A. F. Kuborn, Woonsocket; Quentin A. Lee, Milbank; and H. F. Draine, Sturgis.

Before adjourning the association voted to join the NWWA as a chapter. The next convention will be

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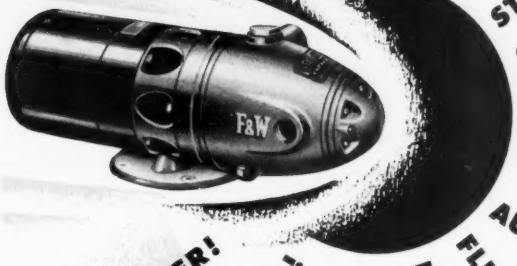

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Change from shallow to deep well simply by moving jet off the pump and down into the well. No extra package or parts to buy. Available with or without vertical tank, or as a compact package unit. ½ HP motor.

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Pumps 40-70% more water . . . uses less electricity than any other shallow well jet pump, thanks to exclusive design patent. Available with or without tank, or as compact package unit illustrated. ¼, ½, ¾, 1 HP motors.

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held in Huron with the date to be decided later.

Wisconsin

Approximately 175 drillers and guests attended the annual convention of the Wisconsin Well Drillers, Inc., held at Hotel Northland, Green Bay, Feb. 14-16.

A comprehensive program included talks by Prof. E. F. Bean, state geologist, who spoke on "Water Witching"; B. F. Gustafson, DuPont Co., who spoke on "Explosives in Well Blasting" and R. C. Woodward, Bucyrus-Erie Co., whose talk was on "Heat Treatment of Well Bits." Papers on social security, well drilling price ceilings, and the NPA pipe procurement picture, were delivered by government representatives. Lloyd G. Oliver, NWWA president, was the principal banquet speaker.

Officers elected for the succeeding year are Beck H. Goldbeck, Appleton, president; George Kriegel, Tigerton, first vice-president; Martin Mastrian, Superior, second vice-president; and Glenn Garber, Milwaukee treasurer. Elected for two years as new directors were: Elmer Sperling, Iron Ridge; John Boettcher, Athelstane and Emil Goecks, Milwaukee.

Many drillers brought their wives who conducted a separate program at the Hotel Beaumont. Prof. Bean was awarded a matched set of smoking pipes in recognition of 24 years of faithful co-operation with the association. The association also went on record to join NWWA on a charter basis.

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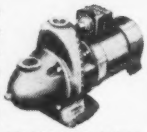

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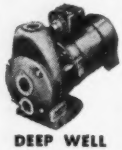

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The Carlon Products Corp. has announced production of new type WS plastic pipe, developed primarily for water service installations and applications involving high vacuum. Similar to EF flexible pipe, this new type has increased wall thickness for protection against burst or collapse when handling higher working pressures or operating in a suction line.

The pipe features flexibility, light weight and resistance to rot, rust and electrolytic corrosion. It is recommended for municipal service connections, use in sand and gravel pits, general construction applications, natural gas transmission, disposal lines in strip and pit mines, and similar applications.

Rapid, low-cost installation is possible with this pipe because of its light weight and flexibility. No special tools or rigging equipment are required. It can be curved to follow irregular contours or to conform to structural plans, and it is furnished

(Continued on page 32)

Why you can drill more feet of well with

TIGER BRAND MOR-SPRING DRILLING LINES

● Take a close look at the cross section of this Tiger Brand Mor-Spring Drilling Line. Notice the diameter of the outside wires—their size provides the resistance to wear necessary for long life.

When this line is ordered in mild plow steel grade, you get the best combination of strength and flexibility—just right for water well drilling.

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UNITED STATES STEEL

BITS from the wit sharpener

During a conversation with an old friend he hadn't seen for some time, a Florida farmer asked how he had been sleeping.

"I sleep good nights," he said, "and I sleep good mornings, but afternoons I just seem to twist and turn."

"Young lady, I'd like to give you a complete physical examination."

"But Doctor Jones examined me last week and found me perfect."

"Yes, that's what he told me."

Husband: "Honey, if I had it to do over again, do you know whom I'd marry?"

Wife: "No, I don't. Who?"

Husband: "You."

Wife: "Oh, no, you wouldn't."

As a result of her snobbish attitude toward servants, a dowager had experienced difficulty in keeping sufficient help in her home. The other day, interviewing a prospective maid, she said: "If you're accepted, I don't want you to be like some of the others — jealous of my wealth and position, resentful and envious because they have to look up to me."

"I'm not like that," said the applicant gently. "I've often looked up at flagpole sitters, but never with envy."

A bald-headed gent stood pensively before the life-sized painting of a curvaceous damsel, clad only in a few strategically placed leaves.

"Waiting for autumn?" asked his wife acidly.

Back in the cold days of February, a certain girl informed her sweetheart that she couldn't think of marrying him until he had saved a thousand dollars. Recently, with the arrival of spring and the world in bloom, she asked him how much he had saved up.

"Oh about $35."

"Well," she said with a blush and a sigh, "I guess that's near enough."

The family had a guest for the night and as there was no extra bed, he and the small son were bedfellows. The guest was first in bed and watched the boy undress. When the latter had adjusted his night clothes, he knelt at the side of the bed and bowed his head. The guest thought that he had better follow the lad's example and say his prayers. Getting out on the opposite side of the bed, he knelt, but was startled by the laughter of his young friend.

"What are you laughing at?" he inquired.

"You'll catch it from mother in the morning; it's on this side."

"Not a day passes that my wife doesn't show her incompatibility."

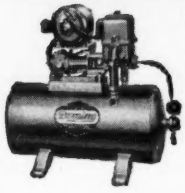
"Yeah ain't it a shame the way women dress these days."

"Me slept with daddy last night," said the small child to the kindergarten teacher who believed in correcting mistakes in grammar regardless of the pupil's age or understanding. With emphasis she said, "I slept with daddy last night." "Well then," said the child, "you must have come in after I went to sleep."

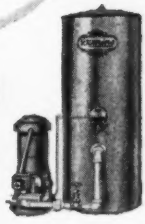
DEMING PUMPS

CUSHIONETTE'
SHALLOW WELL WATER SYSTEM

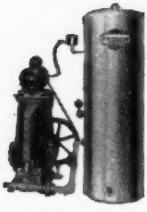
The new HIGH CAPACITY water system with self-contained air pressure control! Capacity up to 685 GPH!

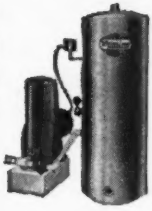


Money-Makers
FOR WELL DRILLERS

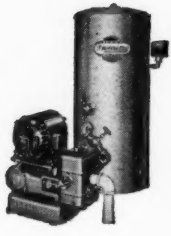


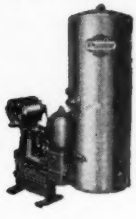
The Deming line is *more complete* than ever before! Regardless of your customers' needs, you can match every requirement with the right type and capacity of Deming Pump or Water System. No other line is as COMPLETE as DEMING! Write for full details.

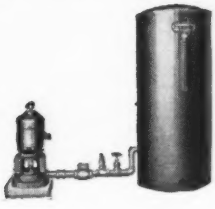




THE DEMING COMPANY
512 BROADWAY • SALEM, OHIO







News . . .

(Continued from page 28)

in long lengths which require fewer fittings. Plastic-to-plastic or plastic-to-metal connections can be made quickly by means of molded plastic fittings.

Further information is available through the company offices located at 10225 Meeck Ave., Cleveland 5, Ohio.

Wells and Pumps . . .

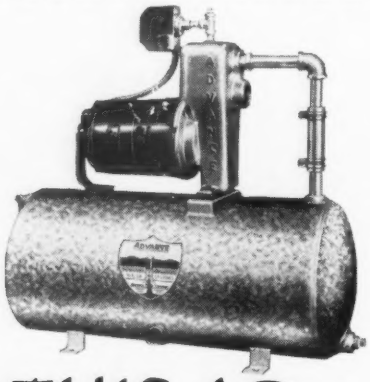
(Continued from page 19)

likely to be measuring some residual drawdown unless he waits many hours. The air line is a simple device. It is simply an air tight ¼-in. pipe, open at the bottom and long enough to remain submerged when the pump is running. The end should be above the lower end of the pump suction pipe at least a foot, however, to avoid any low pressure effect from the pump suction.

At the top end in the pump base there should be a tire valve and a pressure gage. The vertical distance from some reference point such as the pump base or center of the gage dial to the lower end of the pipe must be known. Water level is determined then by pumping air into the line until there is no increase in pressure. The pressure then represents depth of water above the lower end of the air line.

Gages commonly read in pounds per square inch or in feet of water. Pounds per square inch may be converted to feet of water by multiplying by 2.3. Some pressure gages can be set to read the depth of water directly. With these the dial units are feet of water, numbering reversed so that higher reading records lower

Water System Dealers!



Left: New ADVANCE HZ "All-American" shallow well water system. Up to 975 g.p.h. . . . 100% self-priming . . . fully automatic. A sales-builder de luxe.

CLIP THIS AD

YOU'LL WIN SALES . . . BUILD GOOD WILL . . . SAVE YOUR PROFITS with the expanded line of ADVANCE high-capacity automatic water systems —3 to 300 g.p.m. for deep or shallow wells. Streamlined; efficient; durable.— Just clip this ad and mail it to office nearest you for complete details, plus copy of our *new 20-page color catalog describing complete line.* Do it now!

ADVANCE PUMP COMPANY

2531 NINTH STREET
Dept. D, Berkeley 10, Calif.

321 MARKET STREET
Dept. D, Hamilton, Ohio

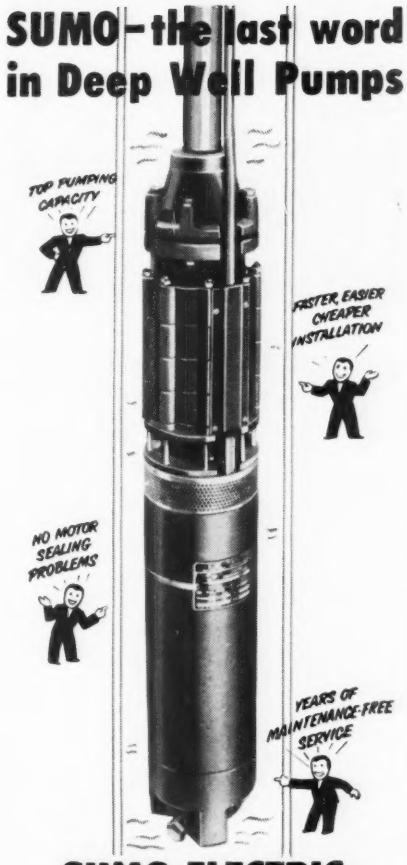
pressure, and the dial is set so that at zero pressure the depth to the lower end of the air line is measured. Direct reading gages are recommended.

Sometimes there is insufficient concern about drawdown during irrigation pumping. The drawdown continues almost indefinitely during pumping so that a short pumping test while cleaning out the well may be inadequate for selection of the pump. There is a common mis-conception that the drawdown occurs in a few minutes and recovery is rapid but data from extensive tests disprove this theory.

Early Wells a Gamble

In Western Kansas in the middle and late Thirties, there was a very large increase in well irrigation. There were different arrangements with regard to pumps. Some drillers did nothing but drill holes and bail them out. Some had a test pump and after pumping out the mud and developing the well would determine the yield and corresponding drawdown for a reasonable price. If the farmer bought the pump for which the driller was agent there was no charge for the test pumping. If he bought elsewhere the test pumping might cost $100 extra. Some had no pump but would leave the rig set up for a few days extra for a price and install the pump which the farmer bought, sometimes with no information other than the driller's opinion that the well "ought to be good for 800 gallons." Some drillers contracted for the completed well equipped with a pump on a cost per foot of depth.

Only one pump salesman in Western Kansas in those years was completely equipped to serve his prospects. He had a test pump, an auxiliary engine for running the pump, a trailer equipped with a boom for installation, a good device


SUMO—the last word in Deep Well Pumps
TOP PUMPING CAPACITY
FASTER, EASIER CHEAPER INSTALLATION
NO MOTOR SEALING PROBLEMS
YEARS OF MAINTENANCE-FREE SERVICE

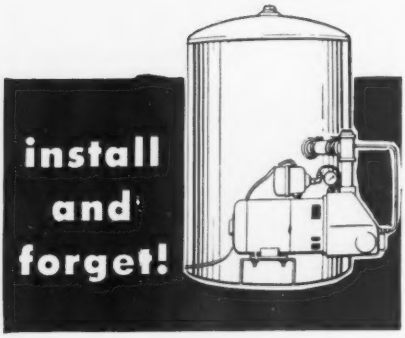
SUMO ELECTRIC SUBMERSIBLE PUMPS

Sumo Submersibles are tops for deep wells. Installations all over the world have proved their superiority in giving completely dependable, trouble-free service. Yet with all their advantages, *Sumos consistently meet and beat competitive prices.* Be sure your next well calls for a Sumo—it will pay handsome dividends.

Sumos are sold by leading distributors throughout the U.S. and Canada.

Sumo®

SUMO PUMPS, INC.
STAMFORD, CONN.



FAIRBANKS-MORSE

Self-priming Pump

You get the kind of trouble-free water service every home owner wants when you install a Fairbanks-Morse self-priming shallow well water system.

This self-priming pump has only *one* moving part. It has no belts or gears to wear out. The ¼ hp. motor has lifetime sealed bearings at the pump end. Rotary seals prevent leakage between pump and motor. Pump is self-priming to depths of 25 feet. Will deliver as high as 600 g.p.h. Comes complete with 42-gal. tank, ready to plug in and use. For details see your Fairbanks-Morse dealer, or mail the coupon for complete information.

Fairbanks, Morse & Co.,
600 S. Michigan Ave.,
Chicago 5, Illinois.
Please send me full details on construction and operation of your self-priming shallow well pump.

Name.....

Address.....*RD*.....

City.....*State*.....

FAIRBANKS-MORSE,
a name worth remembering

for measuring discharge, another for measuring the depth to water while the pump was running and he sold a good line of pumps.

Somebody must give or sell the farmer all of these services if he is to start out with a good irrigation plant. The farmer does not have his own engineer like a city or industry and may not have access to any one skilled in that field. What he needs is a good well and an efficient pump of the right size. What he gets will depend largely on how each drilling contractor and pump merchant does the job.

The Virdells . . .

(Continued from page 14)

cial stems are made up on special order. The heavy tools will of course punch a straighter hole through granite than lighter tools, and they fail to deflect as much when sloping granite formations are found. Virdell uses these heavy tool strings without any special "beefing up" of the rigs, other than a small welded brace at the derrick hinge. No extra shock absorber disks are used; in fact, one 24-L stood the heavy tool string practically day and night for four years before a new set of rubber shock-absorber disks was necessary.

Over the years, a complete line of fishing tools has been developed for any problem which might come up. The development of these tools started back in the 1930's when a driller dropped a rope socket and set of jars 1,000 feet to the bottom of a dry hole. At that time, J. C. Virdell figured out a short combination socket which would grip the broken tools tightly, without allowing any play. The tools in that hole were badly corkscrewed and had to be jerked out by brute force every foot

(Continued on page 38)

DESIGNED RIGHT . . . MADE RIGHT

BUCYRUS-ERIE TOOL WRENCHES

EQUIP your rig with a set of Bucyrus-Erie tool wrenches and you have an unbeatable combination for setting up and breaking tool joints. They're designed right — made right — from start to finish.

Designed for efficient service on the basis of our more than 80 years experience in the manufacture of drilling and fishing tools, these wrenches are made of carefully selected, long-wearing steels which are cast, machined, and heat-treated. With a yield strength of 50,000 lbs. per square inch, they reduce the chance of jaw spread.

Bucyrus-Erie tool wrenches are light in weight and easy to handle, too. Wrenches with a 4-in. square weigh only 165 lbs. each. For ease of handling the wrenches have a rounded edge that lets you take a firm grip even when they are lying flat on the ground. The larger wrenches have conveniently located pick-up handles.

The next time you need tool wrenches — try Bucyrus-Eries. Two types available: with jack ends for use with circle jacks or with claw ends for use with bar-and-chain tightener.

21A51C

Bucyrus-Erie makes a complete line of drilling and fishing tools. Write today for tool catalog and price list.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

BARGAIN Counter

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate· 60c per line. Minimum charge $2.40. No discounts; no commissions. Count your own copy to avoid delay. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Closing date — 10th of preceding month. Example — January issue closes December 10th. Be sure to address separate inquiries to each advertiser by using the correct box numbers. Mail Box inquiries care of THE DRILLER, South Milwaukee, Wis.

DRILLS FOR SALE

Bucyrus-Erie 21-W, new in 1950. 700' new ⅝ & ¾ cable. Mounted on '46 2-ton Chev. truck.

#60 Howell all steel trailer mounted. 500' good & new ⅞ cable. Very good shape.

Armstrong rig mounted on '37 2-ton 2-speed axle IHC truck. Very good jetting rig. E. W. Geib Well Co., Arlington, Minn.

1948 Bucyrus-Erie 22-W with Hercules engine, casing reel, catheads, spooling device, tool guide. Truck mounted, 4-wheel drive Chev. with power derrick hoist. Complete with 5" and 6" tools. All in first-class shape. John Farrell, Arlee, Mont.

Late Model Bucyrus-Erie 24-L. Lots of tools and accessories. No invoice. Come and look at machine if interested. Walker Drilling Co., Box 17, Springerville, Arizona.

1950 #44 Cyclone. Truck mounted.

1949 #44 O.F. Truck mounted.

240 Star. Truck mounted.

#42 Cyclone. Truck mounted.

See R. R. Long, R. R. #6, Jacksonville, Ill. Phone 512.

DRILLS FOR SALE

#40 Speed Star; new Continental 4-cyl. engine with starter. New clutches, power hoist derrick. Price $1200. With cables & string 4" tools, less truck. Rig is in good condition. Ill health, reason for selling. Richard Henderson, Kewanee, Ind.

Dempster B15 trailer mounted. 20 h.p. LeRoi motor on machine. Rig in operation. Bargain at $675. W. A. Snyder, Bayard, Neb.

1949 Model 21-W Bucyrus-Erie drill in good condition. This machine is mounted on a 1937 International two-speed axle truck. Equipment includes new ⅝" drill line, 6" & 8" tools, 2¼"x3¼"-7 API joints. Price $3150. Machine is now working near Okarche, Oklahoma. Clarence Schroeder, Okarche, Oklahoma. Phone 29-F-2.

1948 Bucyrus-Erie 22-W. Trailer mounted. Hercules 6 cyl., casing reel & catheads. Good condition. Jim Feighny, Julesburg, Colo.

Bucyrus-Erie 20-W, with calf reel and cat heads, tools for 5⅝" hole, new cable, on GMC 6x6 with all new tires. Driller in Army. Lloyd Fredebaugh, Newbury, Ohio.

Howell 60, all steel, shock absorber, pneumatic tires, new motor. Located Iowa. Box 467

Sanderson Cyclone, all steel 32 ft. telescopic derrick, on V8 truck. Two 4-in. jetting pumps and swivel mounted, used for jetting. Solid tools 3 and 4", LeRoi 15 H.P. engine, about 300 ft. double XX drill rod, bits, complete set of jars, wrenches & cable. Bought in July 1950. In very good condition. Price $2900. Fred E. Lange, Osseo, Minn. Tel. 17213.

Gus Pech boring machine, all steel, mounted on International truck, power take-off, complete with augers, rods, etc. N. A. Larson, Cambridge, Ill.

DRILLS FOR SALE

Well established drilling and pump business located in northern Illinois. Includes No. 10 Ideco spudder. New in 1949, mounted on 1936 Ford truck. 1½-ton telescoping mast pipe braces, catheads and power derrick hoist with 5", 6" and 8" drilling and fishing tools. 600' of drilling and sand line, oil forge and chain wrenches, pump tools, pipe and dyes. 1945 flat bed International 1½-ton truck. Also 25 acre 6-room home, large garage and work shop and other buildings. Will sell with business, if wanted. S. H. Blanchard, P. O. Box 347, Byron, Ill.

#240 Star, 4 years old, mounted on a 1934 Ford 1½-ton, long-wheel base truck. Equipped with cathead, pipe braces and engine throw-out clutch. Will sell with or without 4" tool string, 600' of ⅝" drilling line and 300' of ⅞" sand line. In A-1 condition. Located in Indiana. Box 468

Home-made machine with 35' all steel derrick with Bucyrus-Erie shock absorber and power derrick hoist. 700' capacity machine powered with Waukesha XA-226X engine. Located in Indiana. Price $1500. J. B. Ortman & Sons, Route #1, Kokomo, Indiana. Phone 23427.

#30 Sparta wood frame band wheel type machine, steel 38' one-piece derrick. Mounted on 2½-ton 1934 Dodge truck. Complete with 350 feet ⅝" drilling cable and 350 feet ⅜" sand line. Bargain with or without tools. For sale by Ray Van Hercke, Little Falls, Minn.

American all steel wire line drill mounted on 5-ton Relay truck with dual pneumatic rear wheel tires. 32' all steel derrick, with shock absorber at top and pipe braces, power derrick hoist. Machine in good operating condition. Powered by Willys jeep engine with 3-speed transmission. Price $1750. Write H. E. Smith, 303 E. Leith, Ft. Wayne, Indiana. Phone Harrison 4346.

DRILLS FOR SALE

All-steel double beam jetting machine with 32′ telescoping derrick. Mounted on 4-wheel trailer with 6.50x16 pneumatic tires. Trailer has low speed self-propelling attachment for maneuvering on location. Power derrick hoist and cathead. Powered with 7½ H.P. Fairbanks Morse diesel engine. Complete with 2″ jetting tools, drill rods, maul and 3x12 duplex pump. Located in Indiana. Price $1750 complete. Box 469

Bucyrus-Erie 23-W drill mounted on a 1936 Inter. truck, with 350 ft. ⅝″ and ¾″ drill and sand lines used about a year. Machine is in good running condition. Truck needs some minor repairs. Must sell account of ill health. Will sacrifice for $1100 cash. Write to Peter Snelten, 1431 Pleasant Road, Glenview, Ill. Phone GL 4-0231.

Keystone 50, 700 ft. ⅞ cable and sandline, tools from 10″ down to 6″. Bailers and fishing tools to go with machine. Mounted on Chev. tandem truck. This machine in excellent condition. E. Andrews, 1307 So. Adams, Peoria, Ill. Phone Peoria 6-9512.

No. 16 Ideco dual rear wheel semi-trailer, with trailer landing gear, casing reel, catheads, 36′ telescopic derrick. XAHU Waukesha engine, just overhauled. 500 feet ⅝″ drilling cable, 500 feet ¾″ sand line. Machine in good operating condition. Located Michigan. Price $3400. Box 454

33-W Bucyrus - Erie drill. Good condition. Recently overhauled. 40 H.P. motor. 38 ft. derrick. Mounted on Chevrolet 2-ton 1944 truck. Reasonably priced. Box 455

STAR 55 drill complete with lines and 4″ tools, engine rebuilt in December. Mounted on 1948 GMC truck FC303 with 7000 miles. Everything in top condition. Sell with or without truck or trade on 83 Star or 36-L Bucyrus. Orval Harden, Route 3, Boise, Idaho.

Cyclone #14 standard blast hole drill. Wood frame, equipped with Wisconsin 22 h.p. air-cooled engine. Mounted on International 3-ton truck. Includes 225′ new manila rope as well as tools. Price $1000. Parker Bros., R. D. #2, Sharon, Pa.

DRILLS FOR SALE

Well equipment. Good used spudders, rotaries, tools. We sell them. We buy them. Contact us if you want to buy or sell. We rent fishing tools. Everything for well drilling. Write or phone. Pressey & Son, Pueblo, Colo.

No 42 Sanderson Cyclone drill mounted on 1941 Mack truck.

No. 40 Sanderson Cyclone drill mounted on 1938 GMC truck. These machines and cables in best of condition and guaranteed. Cleo Enfield, Buffalo, Iowa.

Bucyrus-Erie 24-L complete with all tools, lines, dog-house, water pump, light plant, 1½-ton truck and pipe trailer. Located near Robinson, Illinois. Write or call Buckeye Supply Company, Zanesville, Ohio.

Bucyrus-Erie 21-W drill mounted on 1935 Ford truck with a complete string of 6″ tools with 2x3-7 API threads. 500′ practically new drill cable and sand line. Located southeastern Wisconsin. Box 436

Bucyrus-Erie 33-W drill mounted on 1½-ton good Ford truck with cables. Machine recently overhauled and repainted. Ready to drive away. Reasonable price. Box 457

Bucyrus-Erie 21-W drill with 500′ drill line, 500′ sand line, and all necessary tools. Machine mounted on 1935 Diamond T two-ton truck. Contact Ralph L. Phillips, White Lake, New York.

American all-steel wire line machine mounted on 5-ton Relay truck with dual pneumatic tired rear wheels. 32-ft. derrick with shock absorber in crown, pipe braces, and power derrick hoist. Powered by Willys Jeep engine with three-speed transmission. Price $1750. H. E. Smith, 303 E. Leith, Fort Wayne, Ind. Phone Harrison 4346.

No. 40 Speed Star drilling machine mounted on '32 Diamond T truck. Drilling truck in good shape with 500 ft. ⅝ cable and sand line, almost new. Tools from 3½″-4″-5″-6″, bailers, etc. Complete outfit goes, selling out to go into another business. E. Andrews, 1307 So. Adams, Peoria, Illinois, Phone Peoria 6-9512.

DRILLS FOR SALE

Keystone #50 water well drill for sale. With calf reel, bull reel, mounted on International 10-wheel truck. A-1 condition. Immediate delivery. Price on request. Box 458

No. 1½ all-steel Loomis Clipper, semi-trailer mounted with dual pneumatic rear wheels and trailer bracket. Powered by Chevrolet engine, just overhauled, with 3-speed transmission. 40-ft. all-steel telescoping derrick with shock absorber at top, tool guide, and pipe braces. Casing reel. Machine in good operating condition. Price $1000. Price with 4-in. tools and cable $1200. Write or phone Charles J. Zuber & Son, 2315 Wayne Trace, Fort Wayne, Ind. Phone Anthony 2403.

No. 3½ wire line Keystone with 40 ft. all-steel derrick, rubber shock absorber at top. Powered with U-4 International engine, 1 year old. Built-in casing reel. Mounted on LWB International 5-ton truck. Price $2000 with 5¾-in. tools. Phone or write H. A. Smith, Porter, Ohio. Phone 88275.

All-steel home-made spudder, semi-trailer mounted with dual rear wheels. 40-ft. derrick with Bucyrus shock absorber. 1000-ft. capacity. 2 years old. Complete with '37 Ford 1½-ton truck, $2500. Phone or write Raymond Anderson, Barlow, Ohio. Phone 12F4.

MISCELLANEOUS FOR SALE

New factory rebuilt and assembled main shaft for #16 Ideco drill, complete with new clutches, bearings, sand line friction, crated, $450. F. N. Hagmann, Jr., Vienna, Va.

TURBINE FOR SALE

Pomona Turbine. Serial No. AK5681, 500 GPM capacity, size 8, complete with 270 ft. of column & shaft, bowl assembly, 60 HP 220-440 volt 3 phase motor, discharge head with suction and strainer; this pump was used only two days to test a well, but found to be too large and owner could not return to factory. Priced a half the original cost. Might consider trade for bit dressing machine. Box 465

(Continued on page 38)

MISC. FOR SALE

(Continued from page 37)

Tandem axel pipe trailer, complete with flat bed and stakes. This trailer is made to pull behind a pickup. It has four good tires 7:50x16. It is an ideal trailer for hauling pipe and drill tools, etc. Hoeg & Ames, Lincoln, Iowa.

Johnson brass screens 8", slot No. 20, 8 ft. long, with special fittings-bail down shoe, lead top. 6" 6 ft. long, slot No. 25 Standard fitted. J. J. Primus, 1034 McKinley So., St. Cloud, Minn.

FOR NEW AND USED CABLE DRILLING TOOLS AT BARGAIN PRICES, send for new list 4600 items, 75 stems, 75 bailers, sand pumps, 150 drill bits 4 to 13 inch. Largest selection in eastern states, 7 acres of bargains. TRI STATE TOOL & SUPPLY CO., Box 827, Parkersburg, W. Va.

EQUIPMENT WANTED

Wanted: We buy good used well drilling equipment, spudders, rotaries, core drills, tools. Everything for well drilling and well service. Pressey & Son, Pueblo, Colo.

Jet well drill machine. Give full details and price. Gerald Carlson, 722 — 1st Avenue N, Jamestown, N. Dakota.

HELP WANTED

Experienced water well driller for work in northern Illinois. Must be sober and furnish suitable references. Steady work. Salary and commission or straight salary. Should average $80 to $100 per week.
Box 466

Experienced driller wanted to operate Bucyrus-Erie machines for drilling water wells. Must be reliable and sober.
Box 463

POSITIONS WANTED

Competent driller wants steady work with a dependable company or contractor. Long experience on drilling and can set and pull screens. Can give references. Write: 36 East Main Street, Middleboro, Mass.

PARTNERSHIP WANTED

Established my own pump and drilling business in Northern Indiana in the Spring of 1922. Have a light cable tool rig truck mounted, rigged for jetting 2" and 3" wells at present, also have small shop tools and office equipment, enough to carry on a two or three man business. Have done both rock and drift drilling and can handle anything in the domestic pump line. Am 54 years of age, would like to make a profit sharing,or partnership hookup with a driller, located in 2" to 4" territory, preferably in a small town.
Box 462

The Virdells . . .

(Continued from page 34)

of the way, but the combination socket held, and has been used ever since. One of the toughest fishing jobs was the recovery of a bailer in a 2,700 ft. hole. Fishing jobs now are a mere matter of going into the Llano yard after the tools, and hooking on.

Fishing time as well as routine drilling procedure may be simplified or made much more efficient in the near future, for the Virdells have now made application for a radio broadcasting frequency. When they get it, they plan to install two-way radio at each of the rigs. J. C. Virdell alone is driving about 100,000 miles each year, and the use of radio communication, he believes, will shorten by at least 60% his exposure time on the highways.

Radio communication will also help to make the moves faster between wells by preparing the drillers ahead of time for whatever formations they may encounter.

The Virdell boys, each with their own drill rigs, are college educated, but they are perfectly capable of doing work with their hands, of roughing it in a trailer with their rig, and of working 12 hours a day seven days a week. Each of the Virdells, young and old alike, owns property. J. M., who brought up the rest of the family on drilling machines has been running a rotary rig in Alabama. It is customary for a Virdell to start working around the machines when he's not more than nine years old.

It is this sound foundation which is so much a part of the business which shows through when potential customers want a well drilled. It is the thing which makes a customer reach for his telephone and call the Virdell number, where the word "can't" is never used. For when wells are too tough for anyone else, they're just right for the Virdell boys.

Specify

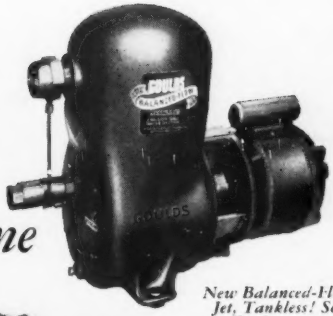
GOULDS

the Dependable Line

led by the amazing

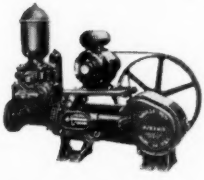
Balanced-Flow

TANKLESS WATER SYSTEM

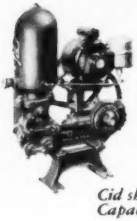


New Balanced-Flow Jet, Tankless! Self-adjusting capacity. Shallow wells only.

New Jet-O-Matic for shallow or deep wells. Wide range of capacities, pressures.



Cid deep well. For wells up to 290' depth.



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Those in attendance at the Missouri Water Well Drillers' Assoc. convention held in Rolla, March 10 and 11, are shown after the banquet, before the entertainment. Speakers and association officers are standing in background.

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